ARGOS FORENSIC Engineering

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R E P O R T

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

KENNETH CHAPMAN, *et al, etc*	
Plaintiffs,	
v.	**CASE: 1:16-cv-01114 JSG**
TRISTAR PRODUCTS, INC.,	
Defendant	

AE-0074

EXPERT REPORT OF DR. JOHN D. PRATT REGARDING
DEFECTIVE TRISTAR POWER PRESSURE COOKER XL MODELS

Prepared for:	**Greg Coleman Law PC**
Author:	**John D. Pratt, Ph.D., P.E.**
Date:	**February 22, 2017**

John D. Pratt, Ph.D., P.E.
Principal, ARGOS ENGINEERING

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EXHIBITS

I. ASSIGNMENT

I was engaged to determine whether Tristar Power Pressure Cooker XL models ("Pressure Cooker(s)") contain a common defect in their design that renders them unsafe and unreasonably dangerous. This report details the findings from: 1) my examination and analysis of the Pressure Cookers and their components, 2) my review of various documents produced by Tristar, 3) my analysis of misleading information in the Pressure Cooker Owner's Manual, and 4) my review of documents produced by Tristar that describe similar incidents.

II. QUALIFICATIONS

I hold Bachelor of Science and Master of Science degrees in Mechanical Engineering from California State University, Fullerton, and a Ph.D. in Civil Engineering (Structural Mechanics) from the University of California, Irvine.

I have worked on the development of permanent and temporary fasteners, mechanisms, and related tooling and equipment, for the aerospace, industrial and sporting goods markets from August 1969 through the present. I am the named inventor on forty-seven United States patents and more than one hundred corresponding foreign patents, and at present have an additional patent application pending before the USPTO. As the senior engineering executive for three medium-sized aerospace hardware companies from early 1979 through mid-2005 I was responsible for reviewing the work of the design and product engineers and presiding over design reviews.

In my role as an engineering executive I was intimately involved in designing products, tooling and machines, including performing kinematics and stress analyses. I was also responsible for overseeing the development of MIL-HDBK-5 design allowables for fasteners and for FAA certification of nacelle latching mechanisms for several models of military and commercial aircraft, including the A380, A318, CRJ700/900, ARJ, 400M, C-17 and others. After the events of 9/11 I co-invented and led the development of the secure cockpit door pressure-sensing decompression panel latches used on half the world's fleet of passenger transport aircraft. More recently I have been intimately involved in the design and development of permanent and temporary fasteners for new aircraft.

As the Engineering Executive I oversaw and managed the operations of the Engineering Test Laboratories at Cherry Aerospace and Monogram Aerospace Fasteners and worked in the R&D laboratory at Olympic Fastening Systems. My work with these laboratories included static and dynamic parts testing, testing of pressurized pneumatic and hydraulic power tools, and metallurgical testing and inspection.

During the period between 2000 and the present I worked on the development of mechanical and electro-mechanical latching and locking devices for aircraft, as well as development of fluid-driven tools for installation of aircraft assembly clamps. I have also been involved in recent patent litigation concerning reversible electric strike mechanisms, magnetic door locks, reversible mortise locks, pressure responsive electrical switches, bulk metal scrap loading apparatus, shear wall reinforcement panels, keyboard support mechanisms, hurricane abatement systems, outdoor lighting fixtures, mint and toothpick dispensers, storm drain covers, aircraft pressure responsive latching mechanisms, and low profile nacelle latches.

Presently, I have my own consulting practice in which I provide litigation consulting as well as perform new product development and consulting for industrial clients. A copy of my CV is attached as Exhibit 1.

III. PUBLICATIONS

A list of all my publications is included in Exhibit 1.

IV. COMPENSATION

My billing rate for this case is $330.00 per hour for litigation consulting, and deposition or trial testimony. Long-distance travel is billed at $165.00 per hour.

V. PRIOR EXPERT TESTIMONY

A list of all cases in which I have testified as an expert at trial or in deposition within the preceding four years is attached as Exhibit 2.

VI. DOCUMENTS RELIED UPON

A list of all documents I relied upon in forming my opinions is attached as Exhibit 3, along with a list of other documents reviewed.

VII. PRESSURE COOKER LID CONSTRUCTION

The lid and base of a Pressure Cooker has locking lugs that overlap when the lid is fully closed to keep it secure when the unit is pressurized. All Pressure Cooker lids are equipped with two types of valves: a manual release valve and a floating valve. The lid also has a lid shield designed to prevent contents from obstructing operation of the valves.

A. MANUAL RELEASE VALVE

The manual release valve is intended to be operated by the consumer to release all of the internal pressure at the completion of a cooking cycle before the lid is to be rotated from the fully closed position and removed from the base unit. Operation of the manual release valve entails rotating the plastic valve knob to a “steam release” position marked on the lid. A consumer must observe the manual release valve to determine when the unit stops venting steam. That and the passage of time are the only ways that a consumer can determine whether the unit appears safe to open. Proper operation of the manual release valve depends on nothing obstructing the flow of pressure/steam through the valve once it is opened by the consumer.

FIGURE 1(a)--Manual Release Valve Sealed

FIGURE 1(b) Manual Release Valve Vented

B. FLOATING VALVE

The floating valve is an automatic safety device that is intended to function as a sort of deadbolt when the contents of the Pressure Cooker are pressurized (FIG. 2 below). It is comprised of a stem having a bypass hole and a silicone seal that, when extended, seals against the inner surface of the lid.

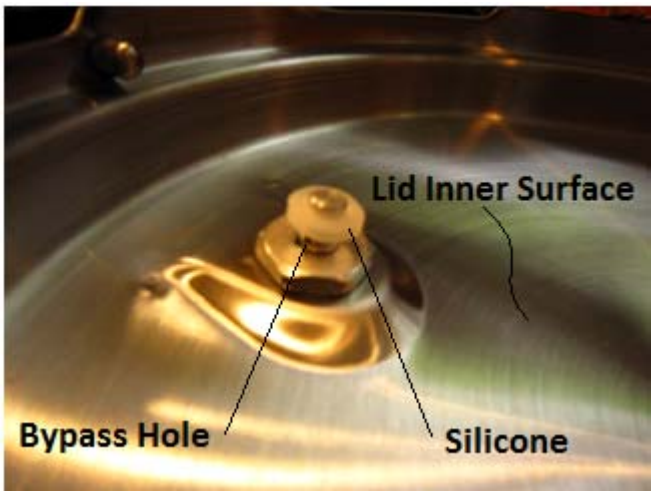

FIGURE 2(a)—Floating Valve Retracted

FIGURE 2(b)—Floating Valve Extended

The weight of the floating valve keeps it retracted (lowered) at low pressures and the bypass hole allows a limited amount of low pressure steam to vent. During the initial stages of the cook cycle, increasing steam generation in the unit eventually creates sufficient pressure to push the floating valve upwards through a hole in a strike plate–provided the lid has been fully closed—to seal the unit so that cooking the contents under pressure may begin. During proper operation of this safety device, if the lid is not fully closed the strike plate hole will not be aligned with the axis of the floating valve. Because movement of the floating valve is therefore being blocked by the position of the strike plate, the floating valve cannot rise far enough to seal the unit and pressure cannot build up inside the Pressure Cooker.

The strike plate is spring biased inwardly and is fixedly connected to a locking pin that slides along a cam surface of the base unit's locking lugs. With the floating valve extended (i.e., when there is enough pressure inside the unit to push the floating valve up into a position where the unit is sealed), the strike plate is restricted from moving freely in and out thus the locking pin cannot slide freely along the cam surface of the base unit's locking lugs. This restriction of movement constitutes the lid locking mechanism that is designed to prevent the Pressure Cooker's lid from being rotated while the unit is pressurized. In other words, if the contents are pressurized the lid is not supposed to be able to be rotated or removed.

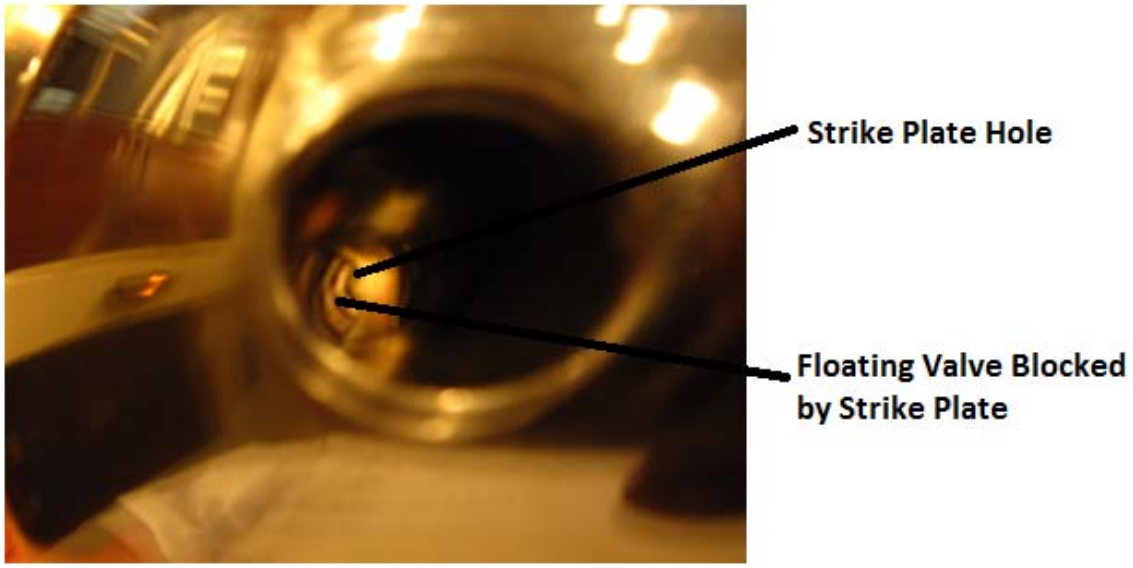

FIGURE 3—View Through Top of Lid of Strike Plate and Blocked Floating Valve

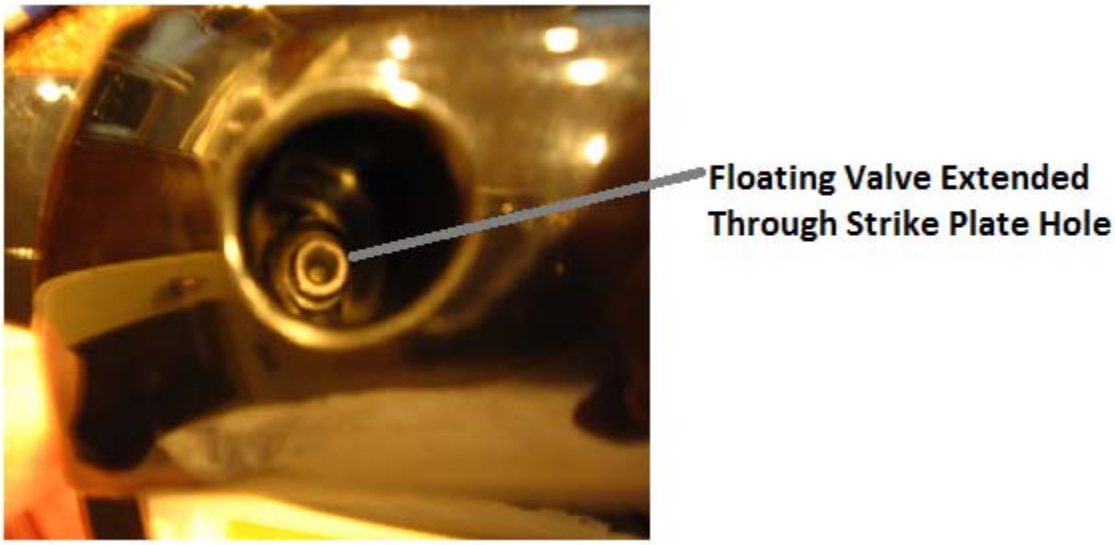

FIGURE 4—Floating Valve Extended Through Strike Plate Hole

The manual release valve and the floating valve are features expressly represented by Tristar as safety mechanisms designed to prevent the unit from pressurizing if the lid is not fully closed and to prevent the lid from being removed when the unit is pressurized.

C. LID SHIELD

The lid shield (FIG. 5) is a sheet metal disc that fits within the lid and that is intended to prevent clogging of the manual release valve and the floating valve. A silicone gasket is attached to the periphery of the lid shield to create a seal between the lid and the base unit. The Owner's Manual describes the lid shield as a "Clog Resistant" feature that "...prevents food from blocking the steam release port" (page 3 of the Owner's Manual).

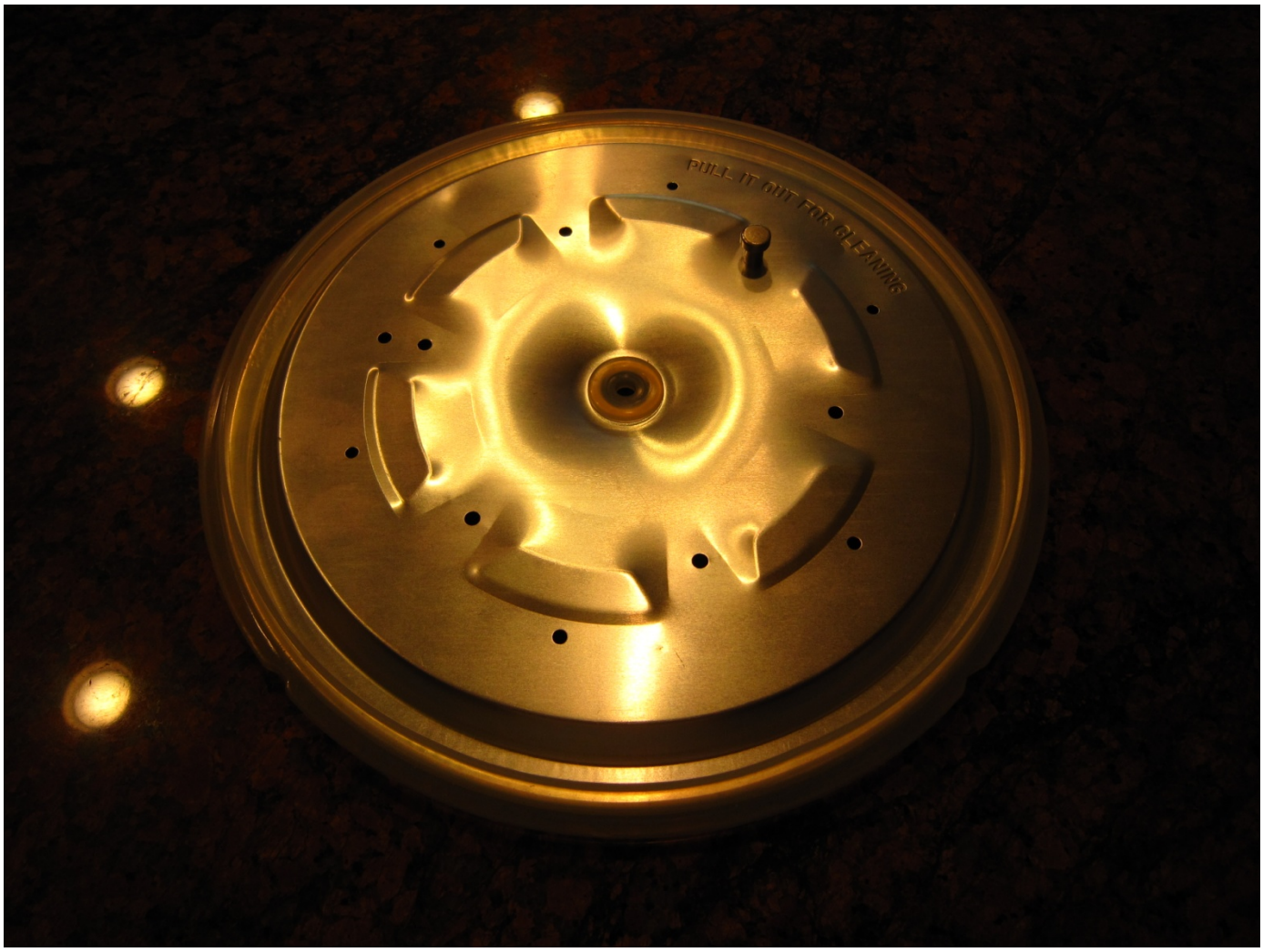

FIGURE 5—Lid Shield with Silicone Gasket Attached

VIII. INITIAL INSPECTION OF THE CHAPMAN UNIT AND AN EXEMPLAR PRESSURE COOKER

I examined Mr. Chapman's Pressure Cooker (PPC770) (6qt. unit), which I understand he opened while the unit remained pressurized. I confirmed that the lid could be removed while pressure remained in the unit by performing the following test. First, I confirmed that when the unit was unpressurized, the force necessary to rotate the lid both clockwise and counterclockwise while the float valve was extended (i.e., in a sealing position) was the same. Next, I removed the manual release valve and attached in its place a 0-30 psi pressure gauge specially adapted for steam applications. Since the Chapman unit was delivered to me without a silicone seal for the lid I borrowed one from an exemplar cooker of the same model and installed it on the lid shield.

Rotation of the lid under pressure toward the open position would have been dangerous so I opted to start my test with the lid at the 50% closed position. This allowed me to rotate the lid under pressure toward the fully closed position and avoid inadvertent removal of the lid from the pressurized unit. It stands to reason that the force necessary to rotate the lid in either direction would be the same, so this was a safer option to determine whether the lid could also be completely removed under pressure.

I installed the screen upside down inside the lid, which was the orientation in which I received the Chapman unit. I placed two cups of cold tap water in the unit, attached the lid to the base turning it to the fully closed position, then manually extended the float valve through the strike plate hole and then rotated the lid to the 50% closed position with the float valve still extended. I put the cooker on a five-minute cook cycle for beans. After reaching an internal pressure of approximately 5 psi I unplugged the unit. Pressure continued to rise to 15 psi before falling off. As the pressure was dropping I attempted to rotate the lid between the midpoint to fully locked. When the pressure reached 2.5 psi I was able to easily rotate the lid back and forth between the midpoint and fully closed.

A pressure of 2.5 psi equates to a force of approximately 177 pounds based on a 9.5" pressure contact diameter. This force would launch the 2.2 pound lid (and the super-heated contents) at over 50 feet per second. For this reason subsequent testing was conducted by rotating the lid only in the relatively "safe" zone between the 50%-closed and fully-locked positions.

I was able to replicate the above results with an exemplar PPC770 Model Pressure Cooker, confirming that the defect in which the lid can be removed while the contents are pressurized was not confined to a single unit.

IX. S-E-A TESTING OF THE CHAPMAN UNIT

On January 2, 2017, I attended an inspection and testing of the Plaintiffs' Pressure Cookers at the facilities of S-E-A Limited in Columbus, Ohio. In addition to myself, Mr. Jason Mattice, P.E., from S-E-A Limited, on behalf of Tristar as well as Tristar's counsel, undertook an evaluation of Plaintiff Vennel's PPC770-1 (6qt. unit), Plaintiff Jackson's PPC780 (8qt. unit), and the Chapman unit I previously tested.

At that time, I repeated the testing described above on the Chapman Pressure Cooker except this time I used a stop key that enabled me to rotate the lid from a fully-closed position to the 50%-closed position. The stop key was designed to prevent rotation beyond the 50%-closed position to the open/removal position. I was able to reproduce, for Mr. Mattice and counsel, test results that mirrored my earlier testing described above. I was able to rotate the lid of the pressurized Chapman unit from fully closed to the 50%-closed position at a pressure of 123.2 kPa (17.87 psi). For reference, the ambient pressure was 97.0 kPa (14.07 psi). The difference is 26.2 kPa (3.80 psi).

Testing was performed with the Pressure Cooker placed upon a 1/8" thick anti-skid pad, although this pad had no influence on the results because the torque applied to the lid was counteracted by my hands simultaneously restraining the base unit's handles. In fact, the position of the base unit's handles relative to the lid handle facilitated rotation of the lid under pressure because the base unit's handles could be used for leverage.

When the pressure dropped to 112 kPa (2.17 psi) the lid could be rotated with one hand. When the pressure dropped to 103 kPa (0.87 psi) the key was removed and the lid was rotated to the fully-open position and the lid was removed accompanied by the sound of a loud "pop" indicative of the remaining pressure in the unit being released.

X. S-E-A TESTING OF THE VENNEL UNIT

Mr. Mattice conducted the same testing on the Vennel unit and was able to rotate the lid from the fully closed position to the 50%-closed position at a pressure of 121.4 kPa (17.61 psi). For reference, the ambient pressure was 96.6 kPa (14.01 psi). The difference was 24.8 kPa (3.60 psi). At 119.0 kPa (3.24 psi) I observed Mr. Mattice rotate the lid primarily using one hand. At 108 kPa (1.68 psi) the safety key was removed, the lid was turned to the fully open position, and the lid was removed with the sound of a loud "pop."

XI. S-E-A TESTING OF THE JACKSON UNIT

Mr. Mattice repeated the same testing on the Jackson unit—this time with the Pressure Cooker on a paper-lined work table without the anti-skid pad. The results were

similar to those from the testing on the Vennel and Chapman Units. Mr. Mattice was able to rotate the lid from the fully-closed position to the 50%-closed position at a pressure of 127.6 kPa (18.51 psi). For reference the ambient pressure was 96.6 kPa (14.01 psi). The difference was 31.0 kPa (4.5 psi). At 119.0 kPa (3.24 psi) Mr. Mattice was again able to rotate the lid primarily with one hand. After removing the stop key the Jackson unit was opened at 107 kPa (1.51 psi).

It is noteworthy that Mr. Mattice requested use of my stop-key device for his testing of the Jackson and Vennel units to avoid inadvertently rotating the lids so far that they would separate explosively from the base units. In addition, when I inquired whether Mr. Mattice would consider removing the stop-key device and completing the lid removal on the Jackson unit at 4.5 psi, he declined. This was a wise decision since opening the unit while it retained that amount of internal pressure would have translated into 319 pounds up upward force exerted against the lid. Opening the lid under that condition would have been extremely hazardous.

XII. PRESSURE COOKER DEFECTS

If a Pressure Cooker's lid can be rotated such that the unit can be opened while its contents are still pressurized, it is dangerously defective. The lid of a properly functioning Pressure Cooker cannot be rotated nor can it be opened while the unit remains pressurized. Thus, the defect in this case is that the Pressure Cooker's lid may be rotated, despite the presence of the floating valve safety device, which allows the lid to be removed while pressure remains in the unit in direct contradiction to the Pressure Cooker's purported design and to the express representations made by Tristar. All three of the Plaintiffs' Pressure Cookers manifested this defect, based on their descriptions of the incidents with their Pressure Cookers. Manifestation of the defect was reproduced in the Chapman unit and an exemplar unit during my individual testing, and in all three of the Plaintiffs' Pressure Cookers during the testing later performed by myself and Tristar's expert at the S-E-A facility in Columbus, Ohio. This defect is a uniform design defect that is common to all models of the Pressure Cookers.

The following mechanical and design flaws cause or contribute to the manifestation of the defect in all Pressure Cooker models:

A. The lid locking safety feature of the Pressure Cooker is easily overcome allowing the lid to be rotated and removed, even while the floating valve is extended (pushed upward) through the hole in the strike plate by the presence of pressure inside the unit. As described above, when the unit is pressurized the float valve is supposed to be pushed upward through a hole in

the strike plate to prevent the locking pin from being able to move outward along the base unit's locking lugs. With the locking pin thus restricted to a depression between the locking lugs, a consumer should not be able to rotate the lid toward the open (i.e., unlocked) position. However, this lid locking safety feature is ineffective because the tolerances and clearance in the feature are such that it takes very little force to push the locking pin past the locking lugs and rotate the lid while the contents are still dangerously pressurized. Compounding this flaw is the designed position of the base unit handles which permit the consumer to rotate the lid using moderate force, even when the consumer may not be aware the contents remain under significant pressure.

The flaw with the lid locking safety feature could have been easily addressed. For example, a slightly longer locking pin that could be grasped between a consumer's thumb and forefinger, in combination with changing the base unit locking lug ramp angle on the locking lug adjacent the locking pin from 45-degrees to 90-degrees, would have corrected this design flaw. First, the consumer would be left with only one hand to rotate the lid because the other would be needed to pull the locking pin outward. Second, the consumer could not grasp and extend the locking pin with sufficient force to override the resistance of the strike plate if the float valve was extended through the strike plate hole. For this improved mechanism the float valve would have to be fully retracted (unit depressurized) before the locking pin could be manually extended. Third, with the floating valve extended, the consumer could not force the lid open unless the locking pin was simultaneously manually extended because the locking pin would simply butt up against the perpendicular end of the locking lug.

B. Despite the presence of the lid shield, which the Pressure Cooker Owner's Manual describes as a "Clog Resistant" feature that *prevents* food from clogging the manual release valve, it is possible for a Pressure Cooker's manual release and floating valves to become clogged. When that occurs, it can appear to the consumer that the unit is no longer pressurized because steam is not escaping, prompting the consumer to try to remove the lid (which can be easily accomplished due to the first design flaw described above). The lid shield is manufactured with numerous holes through which food can pass and enter the manual release and floating valves. Such food debris on and inside the valves was observed on two of the Plaintiffs' Pressure Cookers. My examination of the Chapman and Jackson units revealed food debris in the region between the screen and the underside surface of the lid as well as on the floating valve and manual release valve.

This design flaw is also easily rectified. For example, a lid shield having fewer holes for steam passage and with those holes positioned as far away as possible from the manual release and floating valves would understandably reduce the likelihood of clogging. In addition, the holes in the lid shield could be shaped to direct any contents away from the valves. The lid shield would necessarily need to be configured to fit inside the lid in one, and only one, position relative to the valves.

These mechanical and design flaws allow manifestation of the defect described above, and make all models of the Pressure Cookers defective and unreasonably dangerous.

The Chapman, Vennel, and Jackson Pressure Cookers are typical examples of the Tristar Power Pressure Cooker XL.

XIII. MISLEADING INFORMATION IN THE OWNER'S MANUAL

The Owner's Manual accompanying a Pressure Cooker has misleading or incorrect information that gives consumers a false sense of security, and which inadequately warns consumers of the inherent risks when cooking with the units.

A. The Owner's Manual inaccurately states on pages 3, 5 and 8 that the lid will not open until steam and pressure are completely released. For example:

- "1. Lid Safety Device: *Prevents* pressure build-up if lid is not *closed* and *prevents* lid from opening until *all* pressure is released." (p.3) (emphasis added).

- "Steam and pressure must be *released completely* from the Cooker *before the Lid will open*. To do this, carefully follow the instructions on the previous page." (p. 5) (emphasis added).

- "4. WHY WOULD THE LID COME OFF WHEN IT SHOULDN'T?
  It should only come off if there was no pressure inside." (p. 8)

However, the testing that I performed and the testing that took place at S-E-A clearly demonstrated that lid safety device does *not* prevent the lid from opening when there is pressure inside the unit. The Jackson lid, for example, was opened by Mr. Mattice at a pressure of 4.5 psi, and I was able to open the Chapman lid at a pressure of 3.8 psi.

B. The Owner's Manual further states that the Pressure Cooker has a "Clog Resistant Feature" that prevents food from blocking the "steam release port." It is referring to the lid shield described above and shown in FIG. 5.

- "4. 'Clog Resistant' Feature: *Prevents* food from blocking the steam release port." (p. 3) (emphasis added).

However, as discussed above, the lid shield is ineffective. Rather than "preventing" blockage caused by food, the lid shield incorporates several passages through which food can pass, potentially clogging either the manual release valve and/or the floating valve. If food is caught in the manual release valve it disrupts its operation misleading consumers into believing the internal pressure in the unit has been fully released and that it is safe for the lid to be removed, when the contents actually remain pressurized making the unit unsafe to open.

XIV. CONCLUSION

Based upon the foregoing analysis, review of documents, review of the testimony of Tristar's corporate representatives, and the testing conducted by myself and others, it is my conclusion within a reasonable degree of scientific and engineering certainty that all models of Tristar's Power Pressure Cooker XL are unreasonably dangerous as they are marketed and sold to consumers due to the presence of the uniform and common design defect described above. A Pressure Cooker that can be opened while still pressurized is unreasonably dangerous, cannot be used safely for the purpose for which it was intended, and is unmerchantable. Tristar either knew, or should have known, of the inherent design defect that was not disclosed in Tristar's representations, warnings or instructions. In many instances, Tristar actually represented that the Pressure Cookers were incapable of manifesting the defect when, in fact, they were and are prone to such manifestation. Tristar further misled consumers by expressly representing that the Pressure Cookers could not be opened while the contents remained under pressure when, in fact, the lid can be rotated using only normal force while the unit remains pressurized, in direct contradiction to Tristar's representations.

XV. DECLARATION

A. For all the opinions expressed in this report I have relied upon exhibits, deposition testimony, litigation history, product information and personal experience created, or referenced, in part, in this legal proceeding. I reserve the right to amend or supplement my analysis and conclusions should new information become available.

B. All of my opinions contained herein are based on a reasonable degree of engineering and scientific certainty.

C. I declare under penalty of perjury that the foregoing is true and correct.

Dated: February 22, 2017

John D. Pratt, Ph.D., P.E.

EXHIBIT 1

(Curriculum Vitae)

CURRICULUM VITAE

Argos Engineering provides new product development consulting for the Aerospace Fastener and Aircraft Interiors industries, as well as litigation consulting in the areas of mechanisms, latches and fasteners.

Before retiring as an aerospace industry executive in 2005, Dr. Pratt co-invented and led the development of the post-9/11 secure (terrorist-proof) cockpit door decompression latches now installed on half the world's fleet of aircraft. Previously Dr. Pratt invented and commercialized the first viable blind fastening system for laminated composites. After 30 years, that system (Monogram Aerospace Fasteners' Composi-Lok©) remains one of the most-used structural blind fasteners for composite airframe assembly. Recent litigation consulting projects have included aircraft engine cylinder head bolt failure analysis, aircraft hanger wind-induced anchorage loss, and motor home retractable bunk mechanism analysis. Recent fastener development activities include blind bolt, blind temporary clamp and shear pin development for robotic assembly of aircraft structures.

Expertise

- Fasteners
- Latching Mechanisms
- Aircraft Rapid Decompression
- Engineering, Structural
- Kinematics Analysis
- Mechanisms
- Products Liability
- Wind Load Analysis
- Patent Infringement and Validity

Education

Year	College or University	Degree
2001	University of California, Irvine	Ph.D. - Civil Engineering—Structural Mechanics (Airframe Joint Behavior)
1998	California State University, Fullerton	M.S.M.E.
1996	California State University, Fullerton	B.S.M.E.

ARGOS FORENSIC Engineering

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Professional Experience

From: June 2005

To: Present

Organization: Argos Engineering, Laguna Niguel, CA

Title: Principal

Summary: Argos Engineering provides litigation consulting, deposition and trial testimony, expert reports and failure analysis. Argos engineering has relationships with local laboratories for in-depth mechanical testing and metallurgical analysis. Argos Engineering offers litigation consulting and expert witness services in the following areas:

- Fasteners and mechanically-fastened joint failures.
- Latching mechanisms and latched joint failures, particularly aircraft structural latches.
- Wind-induced building damage.
- Aircraft rapid decompression.
- Mechanism kinematics and failure analysis.
- Metal forming (hot and cold forging) and processing (heat treatment, finishing).

From: August 2000

To: June 2005

Organization: Hartwell Corporation, Placentia, CA

Title: Vice President, Engineering

Summary: Oversaw all new product development and engineering, including development of engine nacelle latches for the Airbus A380, A318, A400M, B787 and RJ700/900 Series aircraft. Also co-invented and led the development of the post-9/11 secure cockpit door decompression mechanisms presently in use on half of the world's fleet of commercial transport aircraft.

Professional Experience (Continued)

From: March 1988

To: August 2000

Organization: Textron Aerospace Fasteners, Santa Ana, CA

Title: Vice President, Research and Development (Started as Director R&D)

Summary: Led the development of various solid shank and blind fastener systems. Founded Textron Sports Technology operation within TAF in 1995 and led that group until its relocation to a commercial Textron division in 1999.

From: February 1979

To: March 1988

Organization: Monogram Aerospace Fasteners, Los Angeles, CA

Title: Engineering Manager

Summary: Led the product development and standardization efforts. Invented Composi-Lok (I & II), Visu-Lok II and other product lines, accounting for sales in excess of $250 million since 1983. Represented company at MIL-HDBK-5, NASC and other standardization activities.

From: August 1969

To: February 1979

Organization: Olympic Fastening Systems, Downey, CA

Title: Sr. Project Engineer, R&D (Started as Drafter Trainee)

Summary: Product development and manufacturing engineering activities, including fastener installation tooling and progressive header tooling. Designed hydraulic-pneumatic installation tools for Olympic's and competitor's product lines.

Professional Affiliations, Achievements & Awards

- Professional Engineering License (Mechanical Engineering), CA, 1979
- National Academy of Forensic Engineers (NAFE)
- American Academy of Forensic Sciences (AAFS)
- National Society of Professional Engineers (NSPE/CSPE)
- American Society of Mechanical Engineers (ASME)
- American Society of Civil Engineers (ASCE)
- American Society of Metals (ASM)
- Society of Forensic Engineers and Scientists (SFES)
- Member of the FAA/DoD Fastener Task Group for MMPDS

Patents & Publications

Patents

4,376,604 4,548,533 4,747,204 5,046,348 5,131,107 5,378,098 5,938,384 6,261,042 7,252,311 8,322,015 8,517,649 9,212,678

4,451,189 4,659,271 4,752,169 5,052,870 5,152,648 5,620,287 5,941,539 6,866,226 7,255,376 8,348,566 8,608,417 9,284,971

4,457,652 4,659,272 4,767,248 5,056,973 5,333,980 5,692,865 5,957,642 6,866,227 7,578,475 8,398,345 8,888,425 9,464,654

4,537,542 4,681,494 4,967,463 5,066,179 5,354,160 5,884,923 6,171,038 7,131,672 7,857,563 8,511,952 8,961,086

Publications:

1. "Fastening of Advanced Composites", NASA conference, 1983, Seattle, WA.
2. "Testing and Analysis of Mechanically-Fastened Lap Joints", Ph.D. Dissertation, John D. Pratt (2001)
3. “Analytical Modeling of Bolted Lap Joint Load-Elongation Behavior”, *Journal of Aerospace Engineering*, January 2002 (ASCE)
4. “Comparative Load-Elongation Behavior of Single-Bolted and Dual-Bolted Lap Joints”, *Journal of Aerospace Engineering*, April 2002 (ASCE)
5. “The Influence of Conical Head Geometry on the Slip Resistance of Bolted Joints”, *Journal of Aerospace Engineering*, October 2002 (ASCE)

6. “Rapid Decompression of Pressurized Aircraft”, *Journal of Failure Analysis and Prevention*, December, 2006 (ASM)
7. “Allowables-Based Flow Curves for Nonlinear Finite-Element Analysis”, *Journal of Failure Analysis and Prevention*, April, 2007 (ASM)

Technical Presentations

- "Fastening of Advanced Composites", NASA conference, 1983, Seattle, WA.
- “Analysis of Wind Damage to Mountain Residence”, SFES Seminar, March 1, 2008, Yosemite CA
- “A Summary of Forensic Engineering Cases”, SFES Seminar, Jan., 11, 2009, St. Helena, CA
- “Rapid Decompression and Flightdeck Security”, SFES Seminar, Oct. 2-3, 2010, Napa, CA

EXHIBIT 2

(Prior Testimony)

Deposition and Trial Testimony 2/22/13 through 2/22/2017

Type of Matter: Products Liability (Tonneau Cover)
Venue: District Court, Clark County, NV Case #A-10-611774-C
Law Firm: Hall Jaffe & Clayton, LLP (Mr. Monte Hall)
Case Name: Hassanali v Custom Fiberglass.
Services Provided: Lit. Consulting, Expert Witness, **Deposition (6/5/2013), Trial (2/6/015)**
Disposition: Closed
Date: November 2011-Feb. 2015

Type of Matter: Patent Infringement
Venue: District of Rhode Island Case #1:11-cv-1975-LDA
Law Firm: Hinckley Allen Synder (Mr. Mitchell Edwards)
Case Name: Global ePoint v GTECH
Services Provided: Lit. Consulting, Expert Witness, **Deposition (12/11/2013)**
Disposition: Settled
Date: October 2011-Jan. 2015

Type of Matter: Patent Infringement
Venue: Central District of California Case # 5:12-CV-1459-JAK (RZ)
Law Firm: Owens Tarabichi LLP (Mr. David Owens)
Case Name: Gunvault v Wintrode
Services Provided: Lit. Consulting, Expert Witness, **Deposition (2/6/2014)**
Disposition: Settled
Date: October 2013-Sept. 2016

Type of Matter: Patent Infringement
Venue: Central District of California Case # EDV13-00830 JGB (SPx)
Law Firm: Knobbe Martins Olson & Bear, LLP (Mr. John Sganga)
Case Name: Resh v Oreg
Services Provided: Lit. Consulting, Expert Witness, **Deposition (9/26/2014)**
Disposition: Closed
Date: May 2014-Dec. 2014

Type of Matter: Patent Infringement
Venue: Case IPR2014-572
Law Firm: Fish & Tsang
Case Name: Bal-Seal v Nelson Products
Services Provided: Lit. Consulting, Expert Witness, **Deposition (4/3/2015)**
Disposition: Settled
Date: Jan. 2015-Fall 2015

Type of Matter: Patent Infringement
Venue: Central District of California Case # 2:14-CV-05934-ODW-RZ
Law Firm: ARDENT Law Group
Case Name: Zipshade v Lowes et al
Services Provided: Lit. Consulting, Expert Witness, **Deposition (5/17/2016)**

Disposition: Active
Date: Feb. 2016-Present

EXHIBIT 3

(Documents and Things Reviewed)

DOCUMENTS AND THINGS REVIEWED AND RELIED UPON IN ARRIVING AT THE OPINIONS HEREIN

1. Class Action Complaint Dated May 10, 2016.
2. Tristar Products, Inc.'s Memorandum in Opposition to Plaintiffs' Motion for Class Certification, with Exhibits A through K.
3. SEA report dated Dec. 29, 2016 for SEA Matter 01.073480--Vasquez v Tristar
4. Deposition Transcripts of Alejandro Lozano, Dec. 20, 2016, with Exhibits 1 through 11.
5. Underwriter's Laboratories UL1026
6. Underwriter's Laboratories UL136
7. Email Report from UL's Paralegal Supervisor--Litigation Services, Marianne.B.OConnell@AOL.com dated 6/17/2013.
8. Tristar PPC770, PPC770-1 and PPC780 pressure cookers belonging to Representative Class members Chapman, Vennel and Jackson, respectively.
9. PPC770 Owner's Manual from an Exemplar cooker.
10. Deposition Transcript for Kenneth Chapman
11. Deposition Transcript for Jason Jackson
12. Deposition Transcript for Jessica Vennel
13. TPI00002574-TPI00002575
14. TPI00002600 through TPI00002643